

ABSTRACT OF THE DISCLOSURE

A cross-layer architecture is provided for delivering multiple media streams over 3G W-CDMA channels in adaptive multimedia wireless networks. A resource management mechanism dynamically allocates resources among different media streams adapted to channel status and Quality of Service (QoS) requirements. By taking the time-varying wireless transmission characteristics into account, an allocation of resources is performed based on a minimum-distortion or minimum-power criterion. Estimates of the time-varying wireless transmission conditions are made through measurements of throughput and error rate. Power and distortion minimized bit allocation schemes are used with the estimated wireless transmission conditions to for dynamically adaptations in transmissions.